

# *The African Organisation for Standardisation*

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467:2012, Degermed maize meal and maize  
grits – Specification



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**Degermed maize meal and maize grits — Specification**



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This African Standard was prepared by the ARSO Technical Harmonization Committee on Agriculture and Food Products (ARSO/THC 1).

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## Introduction

This African Standard is a technical revision of the earlier ARS 467:1987(E), *Standard for degermed maize meal and maize grits* which is hereby superseded and cancelled.

Draft African Standard for comments only — Not to be cited as African Standard





## Degermed maize meal and maize grits — Specification

### 1 Scope

**1.1** This standard applies to degermed maize (corn) meal and to degermed maize (corn) grits for direct human consumption milled from kernels of common maize, *Zea mays* L.

**1.2** This standard does not apply to whole maize (corn) meal, maize (corn) flours, quick grits, hominy grits, self-rising maize (corn) meals, enriched maize (corn) meals, enriched maize (corn) grits, bolted maize (corn) meals, maize (corn) flakes, and alkaline treated maize (corn) products.

**1.3** This standard does not apply to maize (corn) meals for use as a brewing adjunct, to maize (corn) meals used for manufacturing of starch and any industrial use, nor to maize (corn) meal for use as an animal feed.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ARS 461, *Maize grains — Specification*

ARS 53, *General principles of food hygiene — Code of practice*

ARS 56, *Prepackaged foods — Labelling*

CODEX STAN 150, *Standard for food grade salt*

CODEX Stan 192, *General standard for food additives*

CODEX STAN 193, *Codex general standard for contaminants and toxins in food and feed*

ISO 711, *Cereals and cereal products — Determination of moisture content (Basic reference method)*

ISO 712, *Cereals and cereal products — Determination of moisture content — Routine reference method*

ISO 1871, *Food and feed products — General guidelines for the determination of nitrogen by the Kjeldahl method*

ISO 2171, *Determination of ash content*

ISO 2591-1, *Test sieving — Part 1: Methods using test sieves of woven wire cloth and perforated metal plate*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 4832, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique*

ISO 4833, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*

ISO 5498, *Agricultural food products — Determination crude fibre content — General method*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

ISO 6888-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 1: Technique using Baird-Parker agar medium*

ISO 6888-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 2: Technique using rabbit plasma fibrinogen agar medium*

ISO 6888-3, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 3: Detection and MPN technique for low numbers*

ISO 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*

ISO 7932, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of presumptive Bacillus cereus — Colony-count technique at 30 degrees C*

ISO 9526, *Fruits, vegetables and derived products — Determination of iron content by flame atomic absorption spectrometry*

ISO 11085, *Cereals, cereals-based products and animal feeding stuffs — Determination of crude fat and total fat content by the Randall extraction method*

ISO 13690, *Cereals, pulses and milled products — Sampling of static batches*

ISO 16050, *Foodstuffs — Determination of aflatoxin B<sub>1</sub>, and the total content of aflatoxins B<sub>1</sub>, B<sub>2</sub>, G<sub>1</sub> and G<sub>2</sub> in cereals, nuts and derived products — High-performance liquid chromatographic method*

ISO 21527-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95*

ISO/TS 21872-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of potentially enteropathogenic Vibrio spp. — Part 1: Detection of Vibrio parahaemolyticus and Vibrio cholerae*

ISO/TS 21872-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of potentially enteropathogenic Vibrio spp. — Part 2: Detection of species other than Vibrio parahaemolyticus and Vibrio cholerae*

AOAC Official Method 2001.04, *Determination of Fumonisin B<sub>1</sub> and B<sub>2</sub> in corn and corn flakes — Liquid chromatography with immunoaffinity column cleanup*

### 3 Definitions

For the purpose of this standard the following definitions apply.

#### 3.1

##### **degermed maize (corn) meal**

the food prepared from fully mature, sound, degermed kernels of maize (corn), *Zea mays* L., cleaned from impurities, mould, seeds of weeds and other cereals by a grinding process in which the grain is comminuted to a suitable degree of fineness and from which bran and germ are removed. In its

preparation, coarse particles of the ground maize kernel may be separated, reground and recombined with all of the material from which they were separated.

### 3.2

#### degermed maize (corn) grits

the food prepared from fully mature, sound, degermed, kernels of maize (corn), *Zea mays* L., cleaned from impurities, mould, seeds of weeds and other cereals, by a grinding process in which the grain is comminuted to a suitable degree of fineness and from which bran and germ are almost completely removed

## 4 Quality requirements

### 4.1 Raw materials

Degermed maize (corn) meal and degermed maize (corn) grits shall be made from shelled maize conforming to the requirements given in ARS 461.

### 4.2 General requirements

**4.2.1** Degermed maize (corn) meal and degermed maize (corn) grits shall be of natural colour conforming to the colour of maize from which it was prepared.

**4.2.2** Degermed maize (corn) meal and degermed maize (corn) grits shall not contain any foreign matter such as insects, fungi, dirt or other contaminants above the level permitted in ARS 461.

**4.2.2** Degermed maize (corn) meal and degermed maize (corn) grits shall be free from fermented musty or other objectionable colours.

**4.2.3** Degermed maize meal and degermed maize grits shall be free from rancidity, foreign odours and living insects.

**4.2.4** Degermed maize meal and degermed maize grits shall be safe and fit for human consumption in all aspects.

### 4.3 Specific requirements

Degermed maize meal and degermed maize grits products shall conform to the requirements given in Table 1.

**Table 1 — Specific requirements**

S/No.	Characteristic	Requirement	Test method
i)	Fibre content, % by m/m, max.		ISO 5498
ii)	Crude fat on a moisture free basis, % by m/m, max.	2.25	ISO 11085; ISO 5986
iii)	Moisture content, % by m/m, max.	14.0	ISO 711/ ISO 712
iv)	Total ash, % by m/m, max.	1.0	ISO 2171
v)	Acid insoluble ash, % by m/m, max.	0.10	ISO 5985
vi)	Crude protein (N x 6.25) % min on dry weight basis	7.0	ISO 1871
viii)	Granularity		
	Degermed maize meal	95% or more shall through a 0.85 sieve; 45% or more shall pass through a 0.71 mm Sieve; 25% or less shall pass through a 0.210 sieve	ISO 3310-1
	Degermed maize grits	95% or more through a 2.00 mm sieve; 20% or less through a 0.71 mm sieve	ISO 3310-1
ix)	Total Aflatoxin (AFB1+AFB2+AFG1 +AFG2)), ppb max	10	ISO 16050
x)	Aflatoxin B1 only, ppb max	5	
xi)	Fumonisin, ppm max	2	AOAC Official Method 2001.04

## **5 Food additives**

Degermed maize meal and degermed maize grits shall contain only permitted additives complying with CODEX STAN 192.

## **6 Hygiene**

**6.1** Degermed maize meal and degermed maize grits products shall be produced, prepared and handled in accordance with the provisions of appropriate sections of ARS 53.

**6.2** When tested by appropriate methods of sampling and examination, the product:

- shall be free from microorganisms in amounts which may represent a hazard to health;
- shall be free from parasites which may represent a hazard to health; and
- shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

**6.3** Degermed maize meal and degermed maize grits shall be free from pathogenic micro-organism and shall comply with microbiological limits in Table 2.

**Table 2 — Microbiological limits**

<b>S/N</b>	<b>Micro-organism(s)</b>	<b>Requirements</b>	<b>Method of test</b>
1	Total plate count, cfu/g	10 <sup>5</sup>	ISO 4833
2	<i>Staphylococcus aureus</i> cfu/g max	10 <sup>2</sup>	ISO 6888
3	<i>Escherichia coli</i> , cfu/g, max.	absent	ISO 7251
4	<i>Salmonella</i> , per 25g, max.	absent	ISO 6579
5	Coliforms g (per 100 g)	absent	ISO 4832
6	Bacillus cereus, per 25g, max.	absent	ISO 7932
7	Yeasts and moulds, cfu/g, max.	10 <sup>3</sup>	ISO 21527-2
8	<i>Vibrio cholerae</i>	absent	ISO/TS 21872

## **7 Contaminants**

### **7.1 Heavy metals**

Degermed maize meal and degermed maize grits products shall comply with those maximum limits for heavy metals established by the Codex Alimentarius Commission for this commodity.

### **7.2 Pesticide residues**

Degermed maize meal and degermed maize grits products shall comply with those maximum residue limits established by the Codex Alimentarius Commission for this commodity.

### **7.3 Mycotoxins**

Degermed maize meal and degermed maize grits products shall comply with those maximum mycotoxin limits established by the Codex Alimentarius Commission for this commodity. Degermed maize meal and degermed maize grits shall not exceed total aflatoxin of 10 ppb and 5 ppb for aflatoxin B1 when tested in accordance with ISO 16050.

## 8 Packaging

**8.1** Degermed maize meal and degermed maize grits shall be packed suitable packages which shall be clean, sound, free from insects, fungal infestation and the packing material shall be of food grade quality.

**8.2** Degermed maize meal and degermed maize grits shall be packed in containers which will safeguard the hygienic, nutritional, technological and organoleptic qualities of the products.

**8.3** The containers, including packaging material, shall be made of materials which are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odour or flavour to the product.

**8.4** Each package shall be securely closed and sealed.

## 9 Labelling

**9.1** In addition to the requirements ARS 56, each package shall be legibly and indelibly marked with the following:

- i) name of product as "Degermed Maize Meal", or "Degermed Maize Grits";
- iii) name and address of the manufacturer/packer/importer;
- iv) brand name/registered trade mark;
- v) batch or code number;
- vi) net weight in metric units;
- vii) the statement "Store in a Cool Dry Place";
- viii) the statement "Human Food";
- x) country of origin;
- xi) date of manufacture;
- xii) expiry date;
- xiii) instructions for disposal of used package.

### 9.2 Labelling of non-retail containers

Information for non-retail containers shall either be given on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

## 10 Methods of sampling

Sampling shall be done in accordance with the ISO 13690.

**Bibliography**

CODEX STAN 155-1985 (Rev. 1 - 1995), *Degermed maize (corn) meal and maize (corn) grits*

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